



Installation & Maintenance Manual EtherNet/IP Direct input type Step Motor Controller (Servo 24VDC) Series JXC91



1 Safety Instructions

This manual contains essential information for the protection of users and others from possible injury and/or equipment damage.

- Read this manual before using the product, to ensure correct handling, and read the manuals of related apparatus before use.
- Keep this manual in a safe place for future reference.
- These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger", followed by important safety information which must be carefully followed.
- To ensure safety of personnel and equipment the safety instructions in this manual and the product catalogue must be observed, along with other relevant safety practices.

	Caution	CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	Warning	WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	Danger	DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

This product is class A equipment that is intended for use in an industrial environment. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

Warning

- The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results.
The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product.
This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
- Only personnel with appropriate training should operate machinery and equipment.**
The product may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment must be performed by an operator who is appropriately trained and experienced.
- Do not attempt to service or replace product and machinery/equipment until safety is confirmed.**
 1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 2. When the product is to be removed, confirm that the above safety measures are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

1 Safety Instructions (Continued)

Warning

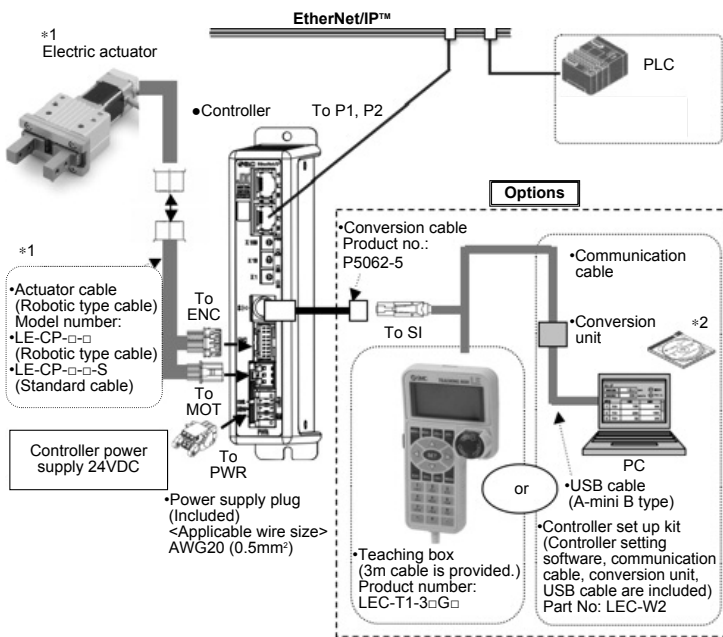
- Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions:**
 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
 3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
 4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

Caution

- The product is provided for use in manufacturing industries.**
The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and provide specifications or a contract, if necessary.
If anything is unclear, contact your nearest sales branch.

Refer to the operation manual on the SMC website (URL <http://www.smcworld.com>).

2 Product configuration



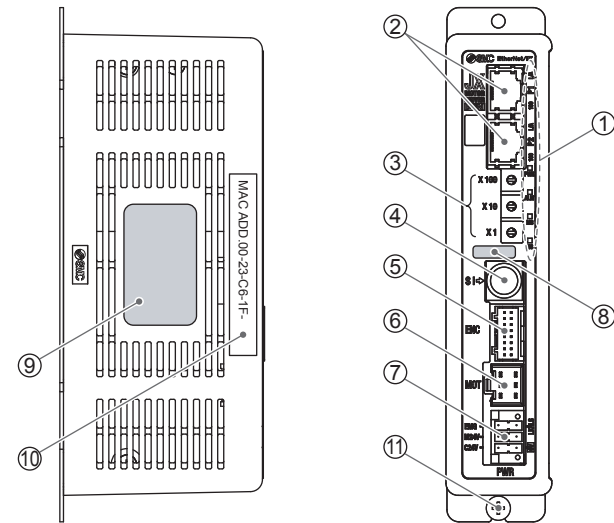
*1 These items are included when ordered using the part number for an actuator set.
*2 The latest version of the controller setting software must be used. Upgrade software can be downloaded from SMC website. <http://www.smcworld.com/>

Warning

The Communication cable must be connected to a PC using a USB cable through a conversion unit. Do not connect the teaching box to a PC. Do not use LAN cable to connect to the controller, as this may cause damage to the personal computer.

3 Parts Description

Detail of the controller parts.



No.	Display	Name	Details
1	-	Display	LED to indicate the controller status.
2	P1, P2	EtherNet/IP communication connector	Connector for Ethernet/IP communication.
3	IP address	IP address	Switch to set the product EtherNet/IP communication IP address (0 to 255) by X1, X10 and X100.
4	SI	Serial I/O connector (8 poles)	Connector for the teaching box (LEC-T1) or the setting software (LEC-W2).
5	ENC	Encoder connector (16 poles)	Connect to the actuator cable.
6	MOT	Motor driving connector (6 poles)	
7	PWR	Power supply connector (5 poles)	Connect to the controller power supply (24VDC) using the power supply plug. Control power (+), Stop signal (+), Motor power (+), Lock release (+), Common power (-)
8	-	Applicable actuator model number label	Applicable actuator description.
9	-	Controller part number label	Label indicating the controller part number.
10	-	MAC address	EtherNet/IP MAC address is displayed.
11	-	FE	Functional Ground. (When the controller is mounted, tighten screws and connect the grounding cable)

4 LED display

LED display
Refer to the table below for the details of the LED status.

LED	Details		
PWR	Power supply status	OFF	Power is not supplied
		Green LED is ON	Power is supplied
ALM	Condition of the controller alarm	OFF	Normal operation
		Red LED is ON	Alarm generated
MS	Condition of the controller	OFF	The controller operating voltage is not supplied.
		Green LED is ON	Operating normally
		Green LED is flashing	Setting error
		Red LED is flashing	Recoverable error
NS	Communication status of EtherNet/IP	Red LED is ON	Unrecoverable error
		OFF	The controller operating voltage is not supplied or IP address is not set.
		Green LED is ON	EtherNet/IP communications established.
		Green LED is flashing	EtherNet/IP communications not established.
L/A1	Link/Act	Red LED is ON	EtherNet/IP connection time out
		Red LED is ON	IP duplicated
		OFF	BUS IN side (P1): No Link, No Activity
		Green LED is ON	BUS IN side (P1): Link, No Activity
L/A2	Link/Act	Green LED is flashing	BUS IN side (P1): Link, Activity
		OFF	BUS OUT side (P2): No Link, Activity
		Green LED is ON	BUS OUT side (P2): Link, No Activity
		Green LED is flashing	BUS OUT side (P2): Link, Activity

LED and Controller Status

Refer to the table below for the LED and the controller status.

Controller status	Details			
	PWR	ALM	MS	NS
When EtherNet/IP communication is normal	-	-	Green LED is ON	Green LED is ON
Motor controller				
Controller alarm generated	LED is OFF	Red LED is ON	-	-
Controller system error generated	Green LED is ON	Red LED is ON	-	-
Writing controller EEPROM	Green LED is flashing	-	-	-

Caution

Do not turn OFF the input power supply for the controller or disconnect and connect the cable while the data is being written to EEPROM (PWR LED (green) is flashing).
* Possibility of incorrect/corrupted data (step data, parameter)

5 Specifications

Basic specifications

Item	Specifications	
Compatible motor	Step motor (servo 24VDC)	
Power supply specification	Power supply voltage: 24VDC±10%	
Current consumption	130mA or less (Controller) Refer to the specification of actuator to be connected for total power consumption.	
Compatible encoder	Incremental A/B phase (800 pulse/rotation)	
Memory	EEPROM	
LED indicator	LED	Details
	L/A1	Link/Act 1
	L/A2	Link/Act 2
	PWR	Supply power
	ALM	Alarm status
	MS	Controller status
	NS	Communication status
Locking	With unlocking terminal	
Cable length	Actuator cable: 20m or less	
Cooling method	Natural air cooling	
Operating temperature range:	0°C to 40°C (No freezing)	
Operating humidity range	90% RH or less (No condensation)	
Insulation resistance	Between the external terminals and case 50MΩ (500VDC)	
Weight	210g (Direct mounting) 230g (DIN rail mounting)	

EtherNet/IP specifications

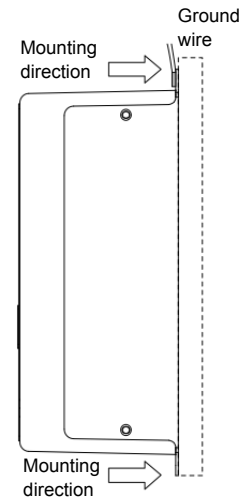
Item	Specifications
Protocol	EtherNet/IP™ (Conformance test version CT-12)
Communication speed	10/100Mbps (automatic negotiation)
Communication cable	Standard Ethernet cable (CAT5 or more, 100BASE-TX)
Communication method	Full duplex/Half duplex (automatic negotiation)
Setup file	EDS file
Occupied area	Input 36 byte/Output 36 byte
IP address setting range	Setting by rotary switch: 192.168.1.1 to 254 Via DHCP server: Arbitrary address
Vendor ID	7h (SMC Corporation)
Product type	2Bh (Generic Device)
Product code	D1h

6 Mounting

(1) Mounting

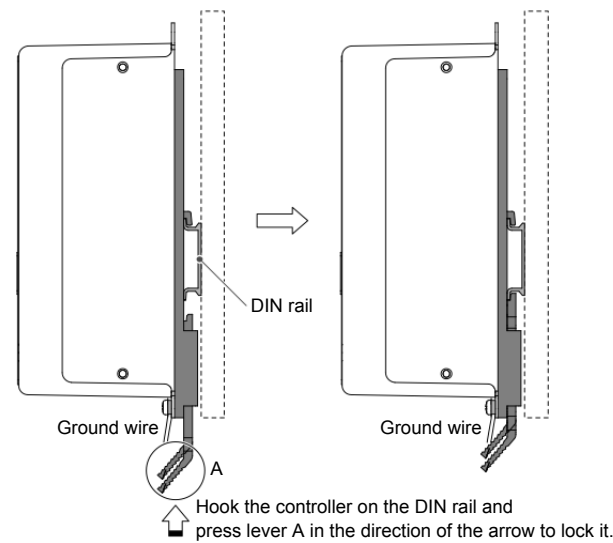
The controller can be direct mounted using screws or mounted on a DIN rail. Details of the controller mounting options are shown below.

[1] Direct mounting (JXC917-□) (Mounting with two M4 screws)



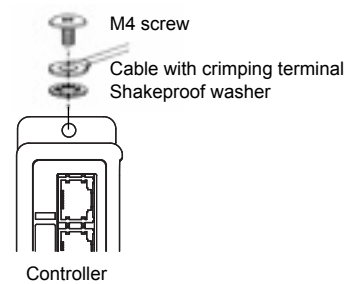
[2] DIN rail mounting (JXC918-□) (Mounting with DIN rail)

Before locked onto DIN rail Locked onto DIN rail



(2) Grounding

Place the grounding cable with crimped terminal between the M4 screw and shakeproof washer as shown below and tighten the screw.



Caution

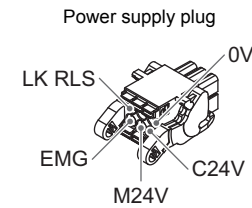
The M4 screw, cable with crimped terminal and shakeproof washer must be prepared by the user. The controller must be connected to Ground to reduce noise.

Refer to the operation manual on SMC website (URL <http://www.smcworld.com>).

7 Power Supply Plug

Power supply plug specifications

The specifications of the power supply plug supplied with the controller are shown below.



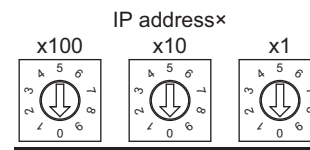
Terminal	Function	Description
0V	Common power (-)	The negative common power for M24V, C24V, EMG and LK RLS.
M24V	Motor power (+)	The positive power for the actuator motor to be supplied via the controller.
C24V	Power supply (+)	The positive control power.
EMG	Stop (+)	The positive power for Stop signal.
LK RLS	Unlocking (+)	The positive power for lock release.

* Equivalent to Phoenix Contact: DFMC1, 5/3-ST-LR

8 Initial Setting method

Setting of switch (IP address)

Turn OFF the power supply while setting the switch. The rotary switch should be set with a small flat blade screwdriver.



IP address 192.168.1.1

Setting			X
x100	x10	x1	
0	0	0	Remote Control (DHCP)
0	0	1	1
0	0	2	2
:	:	:	:
2	5	4	254
2	5	5	DHCP mode
2	5	6	
:	:	:	
9	9	9	Unused

Manual setting of IP address

The default setting is 0.0.1.

Refer to the operation manual on the SMC website (URL <http://www.smcworld.com>).

9 How to order 10 Outline with Dimensions (mm) 11 Maintenance 12 Troubleshooting

Refer to the operation manual on the SMC website (URL <http://www.smcworld.com>).

13 Contacts

AUSTRIA	(43) 2262 62280-0	LATVIA	(371) 781 77 00
BELGIUM	(32) 3 355 1464	LITHUANIA	(370) 5 264 8126
BULGARIA	(359) 2 974 4492	NETHERLANDS	(31) 20 531 8888
CZECH REP.	(420) 541 424 611	NORWAY	(47) 67 12 90 20
DENMARK	(45) 7025 2900	POLAND	(48) 22 211 9600
ESTONIA	(372) 651 0370	PORTUGAL	(351) 21 471 1880
FINLAND	(358) 207 513513	ROMANIA	(40) 21 320 5111
FRANCE	(33) 1 6476 1000	SLOVAKIA	(421) 2 444 56725
GERMANY	(49) 6103 4020	SLOVENIA	(386) 73 885 412
GREECE	(30) 210 271 7265	SPAIN	(34) 945 184 100
HUNGARY	(36) 23 511 390	SWEDEN	(46) 8 603 1200
IRELAND	(353) 1 403 9000	SWITZERLAND	(41) 52 396 3131
ITALY	(39) 02 92711	UNITED KINGDOM	(44) 1908 563888

SMC Corporation

URL <http://www.smcworld.com> (Global) <http://www.smc.eu.com> (Europe)

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